AVR471: MC320 Getting Started Guide

1 Unpacking the system

Kit content:

- 1 ATAVRMC300 Power stage board
- 1 ATAVRMC310 device board for ATmega32M1 AVR® microcontroller
- 1 Brushless DC motor
- 1 Mini-B to A USB cable
- 1 AVR DVD software and technical library
- 1 Dear customer letter

2 Overview

The MC320 kit is a complete hardware system which demonstrates motor control using ATmega32M1 and features CAN and LIN connectivity.

The MC300 is a general-purpose power stage board able to drive brushless DC, brushed DC and stepper motors. The board is designed to be a flexible platform for developing motor control applications.

The MC310 is the device board for ATmega32M1 AVR® microcontroller. It connects to the MC300.

The ATmega32M1 is the first AVR® microcontroller of a new family dedicated to advanced motor-control applications.

The MC320 board can be used to start development of applications which need to drive motors in sensor or sensorless mode with accurate control of speed and torque.

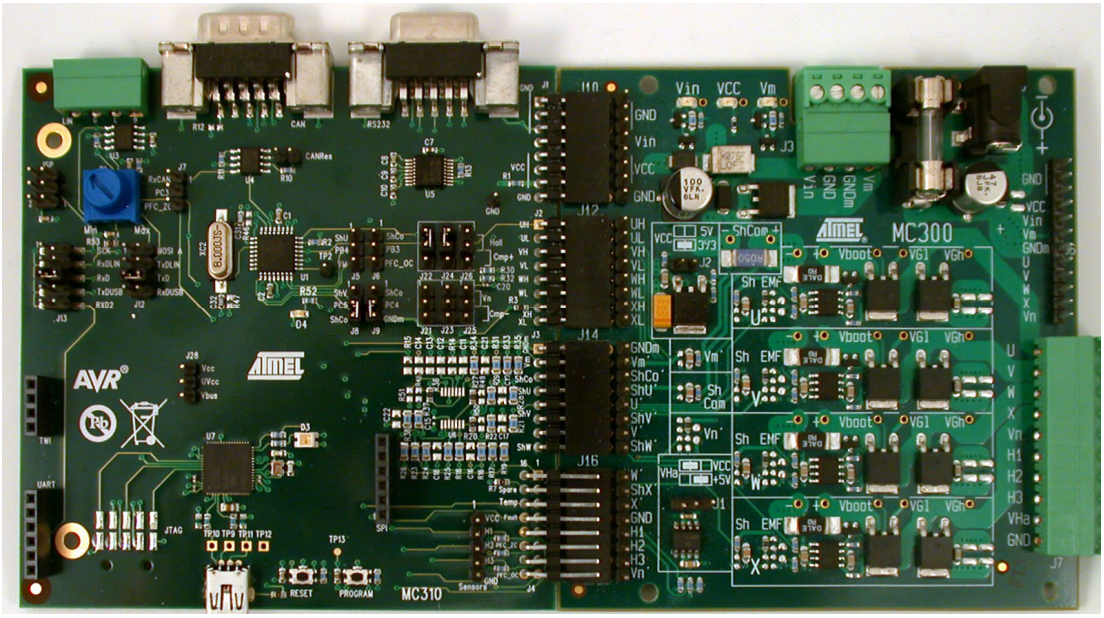
8-bit AVR® Microcontrollers

Application Note

Rev. 8124A-AVR-10/08

3 Connecting the boards

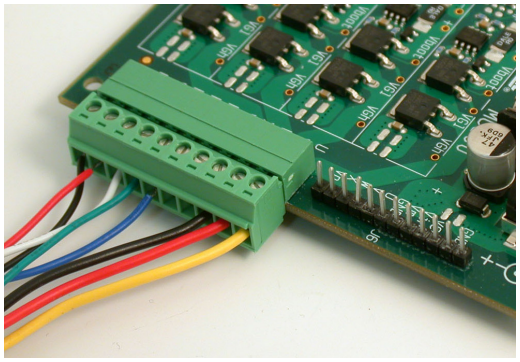
The 2 boards must be connected as shown below:



4 Connecting the BLDC motor

The motor must be connected as shown in the table & picture below:

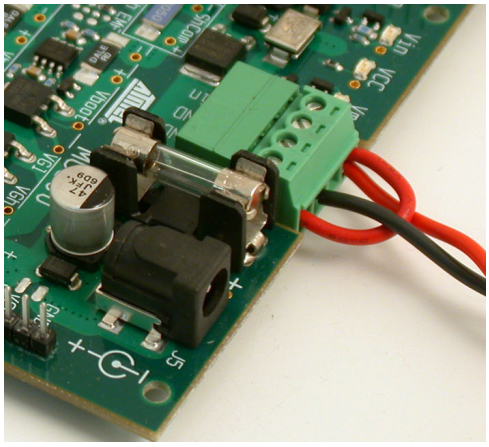
J7 signals	Motor wires
U	Thick yellow
V	Thick red
W	Thick black
X	Not connected
Vn	Not connected
H1	Thin blue
H2	Thin green
H3	Thin white
VHa	Thin red
GND	Thin black



5 Powering the kit

The kit must be powered using J3 connector as shown below:

J3 signals	Power wires
Vin	Thick red (power)
GND	Not connected
GNDm	Thick black (Ground)
Vm	Thick red (power)



Take care to connect Vin (Board supply) to Vm (Motor supply) together.

When powering using J5 jack connector, take care of the polarity as shown on the silk-screen.

Electrical characteristics:

- Vin: 10 – 20VDC coming from the Power board
- Im_{min} = 2A

6 Default jumpers configuration

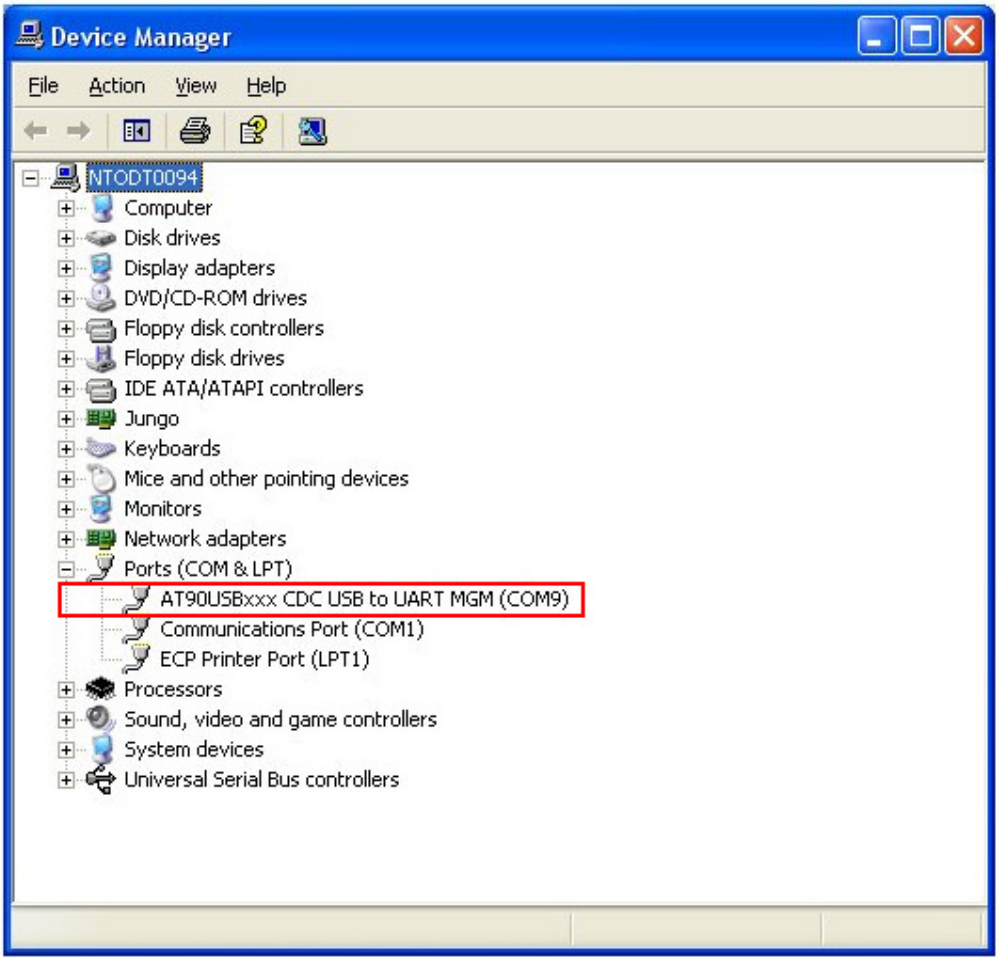
- The following jumpers must be configured as below :
    - J5, J6, J8, J9 : 2-3 jumper closed
    - J21, J23, J25 : 1-2 jumper closed (Vn motor filtered)
    - J22, J24, J26 : 1-2 jumper closed (Hall sensors 1, 2, 3)
    - J12, J13 : 7-8 jumper closed (RxUSB, TxUSB selected)
    - J7 : open (RxCAN)
    - J15 : open (CAN Res)
    - J28 : 1-2 jumper closed (Vcc-UVcc)

7 Default demo

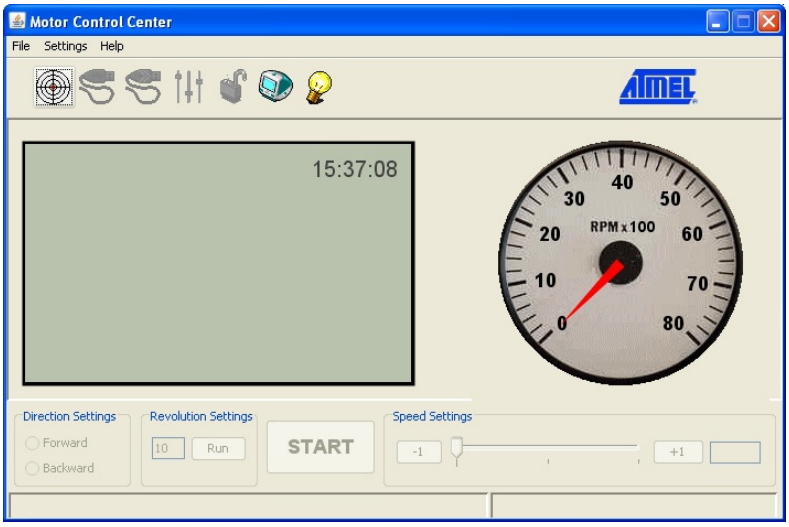
- The MC320 kit is delivered already programmed with a sensor motor control demo. The potentiometer is used to control the motor speed.
- Using the USB cable included in the kit with the Atmel Motor Control Center PC software, the user can drive the motor from the PC interface.

Note:

After connecting the USB cable between a PC & the MC320 kit, a new device detection wizard will appear, point the wizard to the .inf file at90usbxxx_cdc.inf available on the MC320 kit Atmel web page. Check that your device is enumerated as a COM port (see picture below), then you can use the USB interface of MC320 kit as a Virtual COM Port.



Atmel Control Center is available for free on Atmel Web site:
http://www.atmel.com/dyn/products/tools_card.asp?tool_id=4170



If the COM port number is not listed in the communication drop down menu, type it explicitly in the window.

More detailed information can be found on MC300 & MC310 user's guides:

AVR430: MC300 User's guide

AVR470: MC310 User's guide